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TECHNOLOGY DEPARTMENT

December 25, 1948

INDEX

# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



Winter Splendor

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## GENERAL SCIENCE

# New Scientific Vistas

**Birthplace of cosmic rays, origin of magnetism, and an early Maya skeleton are among the discoveries announced in the Carnegie Institution report.**

► A DOZEN major scientific developments were announced in the annual report of the Carnegie Institution of Washington just issued by Dr. Vannevar Bush, president, who was also war-time director of government research.

The birthplace of high-energy particles in the mysterious cosmic rays seems to have been found in the tremendous electric potentials of the variable magnetic fields of "early-type" stars studied by Dr. Horace W. Babcock of Mt. Wilson Observatory.

Occasionally the sun spurts cosmic rays, although most of this earth-bombarding radiation comes from outer space. A research team consisting of Dr. S. E. Forbush and Dr. E. H. Vestine, working with Dr. Manuel Sandoval Vallarta of Mexico, has discovered a "tunnel" can be formed sometimes in the sun's electrical field to let out the billion-volt particles.

The "mother" of chlorophyll, green material that allows the plant to use the sunshine, has been isolated in pure form at the Carnegie Plant Biology laboratories at Stanford, Calif. This protochlorophyll is now being used to study the important process of photosynthesis.

Disturbances in the earth's magnetic field that occur at 27-day intervals have been traced to long-lived bright patches on the revolving sun by Dr. S. B. Nicholson of Mt. Wilson, working with Dr. Oliver Wulf of the U. S. Weather Bureau.

The origin of the earth's magnetism has been narrowed down to two theories: One assumes that the magnetic field is due to a fundamental property of matter and hence associated with the size, mass and rotation of the earth, remaining essentially

unchanged for hundreds of millions of years. According to another theory the field results from a set of complex phenomena inside the earth's central core, based on known electromagnetic laws, which would permit large changes or even reversals of the earth's field during millions of years.

A kind of geologic thermometer was discovered when a mineral, serpentine, was made artificially and shown to be unstable above a temperature of about 900 degrees Fahrenheit.

Flights of B-29 planes at near-record heights of 40,000 to 44,000 feet altitude over thunderheads proved that the electrical field of the earth is kept charged by the 1,800 thunderstorms in progress at any one time on earth.

New kinds of grasses to be used on the grazing ranges of the country are being bred successfully.

A living relative of the redwood, previously known only as a fossil, was discovered and studied in China.

The war gas, nitrogen mustard, was shown to produce changes in the genes, the bearers of heredity of living things, similar to those produced by X-rays.

From a very early Maya tomb in Guatemala the skeleton of a priest or ruler, surrounded by lavish offerings of pottery, carved stone and jade, was unearthed, indicating unexpected technologic progress in the New World at the time that Christ lived in the Old World.

Algae may become a future source of food for the world as a result of experiments that show one kind, *Chlorella*, can produce protein or fat depending upon how it is grown.

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## PSYCHOLOGY

## Mental Cases Being Aided

► VETERANS with such serious mental illness that they seemed doomed to living their lives out in a mental hospital are being restored to health under a new "intensive treatment" program of the Veterans Administration.

A potential discharge rate of almost 40% seems likely on the basis of progress so far.

In a group of 200 World War II veterans at the Northport, Long Island, VA Hospital, 16 have returned home during the past year and 14 others will soon leave for trial visits at home. An additional 45

are considered good prospects for eventual discharge.

Two of the 16 discharged patients are now employed fulltime. VA medical authorities are hopeful regarding the others. They point out that each veteran's release from the hospital puts him in a category in which chances for complete recovery are much greater.

The intensive treatment program is known officially as the Reintegrative Research Program. It was started at Northport last December, under the direction of Dr. William L. Harris, and has since been

adopted by several other VA neuropsychiatric hospitals.

The basic aim of the new program is to increase the interests of the individual patient. Most psychotic patients, who are the ones with the most serious mental illnesses, avoid taking part in group athletics or other forms of occupational therapy and have little or no interest in what goes on around them.

Working in a separate gymnasium and in special treatment rooms, the patients now are on a completely supervised 7 A.M. to 9 P.M. schedule, five days a week. They are housed in a separate ward of the hospital and divided into four groups to facilitate handling.

Starting with such basic forms of athletics as pummeling a punching bag, to relieve some of the aggressive tendencies and tensions displayed by many of these patients, the group is alternated between occupational therapy, corrective therapy, athletics and recreation.

Ping-pong and miniature bowling are suggested to encourage the spirit of competition. Individual and group psychotherapy is available.

Progress is extremely slow, but as individual patients show interest in the activities made available to them, they are advanced to more difficult tasks.

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## PUBLIC HEALTH

## Three Decades to Add Years to Our Lives

► THE AVERAGE length of life in the United States may be extended by almost five years during the next three decades, statisticians of the Metropolitan Life Insurance Company predicted.

By 1960 the average length of life will be 68.4 years and by 1975 it will be 71.4 years. The prediction is based on a "low" mortality forecast which, however, is so conservative that in the past it turned out to be higher than the actual mortality by 2.8%.

For the 20-year-olds in our population, the prospective gain in expectation of life amounts to three and one-half years. At age 40 it is two and three-quarter years and at age 60 almost one year.

By 1975 it is expected that nine-tenths of the new babies born that year will live about 50 years.

"It would not be surprising," the statisticians point out, "if the life table for 1975 should again prove to be too conservative. This does not mean, however, that future gains in longevity will be achieved as readily as those in the past. On the contrary, further gains will require for comparable accomplishment even a higher price in time, effort and funds than we have been accustomed to pay."

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## NUCLEAR PHYSICS

# Plenty of Uranium

The problem is to find new deposits of this atomic bomb element. Estimates are that it is a thousand times more plentiful than gold.

► THERE'S plenty of uranium in the world for the atomic age, chairman David E. Lilienthal of the U. S. Atomic Energy Commission declared.

The big raw material problems being pressed by the Commission, are where it is and how to get it, Mr. Lilienthal said.

Here is where the atomic bomb element, uranium, (believed to form some four ten-thousandths of the earth's crust) is known to be, thus far:

1. High grade deposits of pitchblende-uranium. Three of these deposits are known, two outside the Iron Curtain and one inside. Russia is exploiting deposits in the Erzgebirge district of Czechoslovakia and Germany, while the U. S. gets uranium from both Eldorado in Canada and the Shinkolobwe deposits, in the Belgian Congo.

2. Colorado plateau ores of vanadium-uranium. Known as carnotite and roscoelite, these ores are chiefly important in this country—and are "quite inferior" to the high grade ores.

3. Gold-uranium ores of South Africa. Discovery of uranium as a by-product of gold mining in South Africa has set American scientists to systematically searching all mine and smelter products in the U. S. for possible by-product uranium.

4. Oil shales which bear uranium may supply millions of tons of uranium ore, Swedish reports indicate. The uranium-bearing oil shale which the Swedes are investigating is known to extend into Russia. In the U. S., the AEC is studying all possible oil shale-uranium deposits.

5. Miscellaneous types of mineral deposits which have been found to contain small amounts of uranium.

Uranium prospecting, Mr. Lilienthal indicated, may be more profitable than the traditional search for gold. The Commission is paying off on discoveries of new deposits. And estimates are that uranium may be a thousand times more plentiful than gold on the earth.

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since the war and Russia has its own great scientists in the nuclear field, among them Kapitza.

The Drs. Joliot-Curie have been in this country since the war, Dr. Joliot-Curie himself headed the French delegation to the United Nations Atomic Energy discussions. Both of them attended the Princeton bicentennial celebration in 1946.

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## BIOCHEMISTRY

## Powerful Growth Promoting Substance in Coconut Milk

► COCONUT MILK contains a still-unidentified substance that is a sort of "embryo juice" and is exceedingly potent in stimulating growth in certain plant tissues. This discovery was announced by Dr. S. M. Caplin and Prof. F. C. Steward of the University of Rochester in the journal, SCIENCE (Dec. 10).

In their experiments they used tiny pieces of carrot tissue, kept under sterile conditions and supplied with a standard nutrient solution. To some of the cultures they added heat-sterilized, filtered coconut milk; to others the well-known growth-promoting chemical, indole acetic acid;

## NUCLEAR PHYSICS

# France's Atomic Pile

► JUST BECAUSE France has put into operation the world's fourteenth and its first atomic energy "furnace" or chain-reacting pile, under the direction of the avowedly-Communist physicist and Nobelist, Frederic Joliot-Curie, it does not mean that Russia has the atomic bomb.

The French pile near Paris uses uranium, with heavy water instead of graphite as the moderator.

There is a long gap between the atomic pile and the atomic bomb. And a French Communist is not a Moscow communist, although Dr. Joliot-Curie has been quoted as saying that he would give the secret of the atomic bomb to anyone if he knew it.

There are secrets in connection with atomic pile operation. But they are not the same kind of secrets as those involved in the mechanism of the atomic bomb as a military weapon. The secret of the bomb is largely in the "know-how" of putting together two pieces of fissionable material fast enough and safely enough to produce the explosion.

In this country's pioneering it was about two and a half years between the first pile in Chicago (1942) and the first atomic bomb explosion (1945). U. S. bomb production is based upon the production of plutonium, made from non-fissionable uranium,

in three big piles at Hanford, Washington state. The piles elsewhere than at Hanford, including those in Canada, Britain and France, produce little or no usable plutonium so far as known. Atomic bombs are made only in the U. S. A. so far as one can judge.

France might have had an atomic pile much earlier, for at least one French scientist has the ability to make one. Bertram Goldschmidt, French physicist, is credited with having had much to do with the building of the Canadian pile at Chalk River. He was not allowed to continue in the work when military authorities wanted him to become either an American, British or Canadian citizen and he wanted to remain a Frenchman.

Dr. Joliot-Curie, married to the famous daughter of the famous Curies, was the first to produce artificial radioactivity, an achievement he shared with his wife, Irene. That was in 1934. He is admittedly still in the forefront of atomic and nuclear research.

What France can do, Soviet Russia can undoubtedly do. News from Moscow of a Soviet pile would not be surprising, except that the secrecy there is more iron-clad than anywhere else in the world. German scientists are known to be working there



## SUBSONIC RESEARCH PLANE

—Swept-back wings and a single vertical fin characterize the new USAF's Northrop X-4. It was designed to conduct investigations of speeds just short of sound. The plane is powered by two jet engines and is equipped with an ejection seat for the pilot. The wing span is about 25 feet, length about 20 feet, and weight approximately 7,000 pounds. It completed its first flight test recently at Muroc, Calif., test base.



still other cultures received no additions and served as controls.

The bits of carrot in the control cultures remained alive but failed to grow. Those receiving indole acetic acid showed slow growth, while those receiving coconut milk grew quite rapidly. Their average increase in weight, over a three-week period, was 23 times that of the pieces receiving indole acetic acid.

Although the substance has not yet been identified or isolated, there is some sug-

gestion that it has some relation to the formation or utilization of vitamin A. Further experiments looking into this are now in progress. The two researchers also call attention to a curious analogy in animal life: it has long been known that growth of animal tissue cultures is stimulated by "embryo juice" of animal origin; coconut milk, since it nourishes a plant embryo in the nut, may well be regarded as an "embryo juice" of plant origin.

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## MEDICINE

# Resistance to Cancer

➤ A NEW principle by which resistance to cancer can be increased has been discovered by Dr. Leonell C. Strong of Yale University.

The discovery so far relates only to resistance of mice against cancer induced by injections of a chemical, methylcholanthrene. But, Dr. Strong says, when the new principle is identified, it perhaps will clear up other phases of the cancer problem, such as prevention and spontaneous regression.

The new principle, he states in his report to the journal, *SCIENCE* (Dec. 17), is probably biochemical in nature. It is transmitted to the next generation through the mother. It is probably not transmitted through the mother's milk, experiments with foster nursing show. It is not a genetic factor. It may also be transmitted from the father but the evidence does not yet show this.

Whatever the new principle is, it influences the rate at which the offspring develop cancer in response to the chemical.

The new principle or agent varies in amount or potency with advancing age. Mice of the first and second litters of parents transmitting the principle develop cancer at a slower rate than their brothers and sisters of the third and fourth litters. The fifth and sixth litters show even less in-

fluence of this cancer-resistant principle.

The resistance, Dr. Strong concludes, is due to the fact that "something is increasing or decreasing in the mother's body that is being handed down to her offspring."

The next step, he points out, is to identify the cancer-resistant agent in mice. Once the substance is identified, the development of a chemical like a vaccine might be achieved.

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## BOTANY

# African Tree Considered Worth Trying in U. S.

➤ A TREE grows in Morocco that might be well worth a trial in the southwestern United States, states Dr. W. C. Lowdermilk, formerly of the U. S. Soil Conservation Service, just returned from a five-month tour in North Africa as consultant to the French Colonial authorities.

The tree has no common English name; botanists know it as *Argania spinosa*. The "spinosa" part is well merited, for branches and twigs are exceedingly spiny. The leaves, however, are relished by livestock; yet the tree manages to survive even the browsing of the most destructive goats. Requiring little water, it achieves a maximum trunk diameter of 18 inches, and lifts a bushy

crown to a height of 40 feet.

Although it is not related to the olive, its fruits resemble olives in size and shape. The pulp is not appetizing to human taste, but goats and camels like it.

The seeds are the part adapted to human use. They contain a great deal of oil, which the natives of the country press out and use in cooking. They prefer it to olive oil.

A few trees of this species were once planted in California, Dr. Lowdermilk says, but the experiment was not followed through and apparently the trees have perished. He feels that another, more thorough trial might result in the introduction of a valuable addition to our list of dry-land economic plants.

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Photographs: Cover, Western Pine Association; p. 403, U. S. Air Force; p. 405, British Information Services; p. 406, Fremont Davis.

## MEDICINE

# Amebic Disease Increases

The infection has more than doubled the number of its victims in the first half of 1948. Two new drugs for treating the disease show promise.

► AN INCREASE in amebic dysentery and amebiasis in the United States, especially since the end of the war, and two new drugs for treating it were reported at the meeting in New Orleans of the American Society of Tropical Medicine.

More than twice as many cases of amebic infection have been reported during the first six months of 1948 as the 1943-1947 median figure for the corresponding period, Dr. Willard H. Wright, U. S. National Institutes of Health tropical diseases laboratory chief, reported.

Total cases for the first half of 1948 were 1,988. The median figure was 961. The actual number of cases probably is higher than the reported figure.

Reported cases of this disease have gradually increased in past 15 years, since an outbreak in Chicago dramatized the presence in the United States of an infection once considered a tropical disease. Although the increase has been more marked since 1945, Dr. Wright said the return of infected military personnel has apparently had very little influence on the amount of reported amebiasis in this country. If the present rate of increase in reported cases continues, however, this conclusion may be reversed.

The disease is more prevalent in the west south central states, comprising Louisiana, Arkansas, Oklahoma and Texas, than in any other part of the United States. It is more prevalent in the southern states as a whole than any other section, with the possible exception of the Pacific coast states. New England ranks lowest in reported cases, deaths and morbidity rates.

The two drugs for fighting the infection are known so far only by their laboratory names and numbers, WIN 1011 and WIN 246. They were reported by Drs. E. W. Dennis and D. A. Berberian and Miss Sophie S. Hansen of the Sterling-Winthrop Research Institute, Rensselaer, N. Y.

Of 31 patients given WIN 1011, all were promptly cleared of the infection and 28 were permanently cured, Dr. Dennis reported. The other three had recurrences in the 5th, 14th and 20th week, respectively, after treatment. The drug was sufficiently low in toxicity to enable the doctor to give relatively large doses for seven to 10 days.

WIN 246 is an anti-malaria drug, Aralen, with iodine substituted for the chlorine of Aralen to slow its absorption and increase its activity against the amebas. Laboratory animals were effectively freed of their intestinal amebas when given this drug.

Giving two Aralen tablets a week for six weeks to all persons living in areas where malaria is prevalent, in conjunction with DDT spray to control the mosquitoes, provides an economical method of eradicating malaria in endemic areas and

of conquering "a major consequence of the disease in its chronic form," Drs. Berberian and Dennis reported on the basis of tests in two villages in Lebanon.

The "major consequence" they discussed is the enlargement of the spleen which is a serious complication of chronic malaria and causes widespread disability.

In one village where all 215 of the population were given Aralen twice a week, the incidence of enlarged spleens was reduced from 59% to 6% within about 26 weeks. Within the same period the size of the enlarged spleens was reduced on the average from an index of 3 to 0.2.

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## MEDICINE

# Lung Cancer Detection

► LUNG CANCER, which causes 15,000 deaths every year in the United States and is increasing, can be diagnosed in 90% of the cases by sputum test, Drs. Seymour M. Farber, Mortimer A. Benioff and A. K. McGrath of the University of California Medical School reported at the meeting of the Radiological Society of North America in San Francisco.

The test consists of a microscopic examination of stained cells in the sputum.

Cancer cells show characteristic differences from normal cells which can be detected by a trained observer.

Of 671 patients suspected of having lung cancer, 100 eventually proved to have cancer. The sputum test diagnosed the cancer in 71 of these cases. But higher percentage of accurate diagnoses was made in more recent tests in which five or six samples of sputum, instead of only one, were examined. In 69 cases of proved lung



**DEATH TO THE PEST**—A 100 m.p.h. gale is created with an insecticide by the Autoblast, a mobile sprayer invented in Britain. The point of ejection is a fast-revolving fan rotating in an enclosed cylinder. Low water pressure atomizes the insecticide which is sprayed over a radius of a complete semi-circle of 40 feet. It is manufactured by the Kent Engineering and Foundry Ltd., Phoenix Works, Tovil, Maidstone, Kent, England.



cancer, in which adequate samples of sputum were available for examination, the test detected the presence of the disease in 63, or 90%.

Increasing experience with the test has helped improve its accuracy, and efficiency will be further increased with more experience. The University is developing techniques for mass application of the test and

training cytologists in the art of differentiating cancer cells.

An early test for the disease is important, the doctors pointed out, because surgeons are now able to remove a cancerous lung and save the patient when the disease is found early.

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#### ASTRONOMY

## Carbons in Atmosphere

Small amounts of heavy carbon as well as large quantities of the more familiar type have been detected through use of the sun's spectrum.

► OUR atmosphere many miles above the earth contains small amounts of heavy carbon as well as large quantities of the more familiar type of carbon.

This heavy carbon has been detected by Drs. Leo Goldberg, Orren C. Mohler and Robert R. McMath, University of Michigan astronomers working at the McMath-Hulbert Observatory, Ann Arbor, Mich.

Two different isotopic kinds of carbon dioxide were detected by these astronomers in research on the earth's atmosphere. Each molecule of one of these forms of carbon dioxide is composed of two atoms of oxygen of the usual variety to each atom of heavy-weight carbon. Molecules of the other variety are made up of one atom of carbon to one of the usual variety of oxygen to one of heavy-weight oxygen.

The presence of these forms of carbon dioxide, the gas that you breathe out and that plants need to live, was detected through use of the sun's spectrum.

The special lines indicating their presence are known to originate in the earth's atmosphere rather than in the sun because they appear most strongly when the sun is near the horizon. At sunrise and sunset, light from the sun passes through more of the earth's atmosphere than at other times.

Heavy carbon such as that just detected in the earth's rarefied atmosphere is technically known as carbon 13. Although an atom of carbon normally is 12 times as heavy as an atom of hydrogen, an atom of this rare type weighs 13 times as much as a hydrogen atom.

Carbon 13 has recently been put to work, helping scientists estimate the temperature of seas that existed on earth millions of years ago. Determination of the amount of heavy oxygen in the fossil skeletons of squid-like animals indicates the temperature of the ancient seas in which these animals lived.

While it is not possible at present from the sun's spectrum to estimate the relative abundance of these isotopes, the McMath-Hulbert astronomers reported in the *PHYSICAL REVIEW* (Dec. 15) that they probably are found as often as heavy carbon and heavy oxygen.

About 98.9% of the carbon in the lower atmosphere is of the regular, stable type ( $C^{12}$ ), and only 1.1% is the heavy variety ( $C^{13}$ ). It is estimated that 99.7% of the oxygen in the lower atmosphere is of the regular type ( $O^{16}$ ), and 0.2% is of this heavy, rare kind ( $O^{18}$ ).

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#### ZOOLOGY

## Strange Reptilian Species Flown Here from Australia

► STRANGE, new reptile specimens from Australia have just arrived by air, to be added to the collection at the National Zoological Park in Washington, D. C. Among them are 12 long-necked tortoises,

two tiger snakes and two blacksnakes.

The latter are not related to the harmless native American blacksnakes, explained Director William A. Mann. They are highly poisonous, as are also the tiger snakes.

There are also a lot of lizards: an even dozen each of water dragons, bearded lizards, blue-tongue skinks, brown skinks and Cunningham skinks.

The Zoo has also acquired a young female California condor, to share his cage with the male of the same species already at the zoo.

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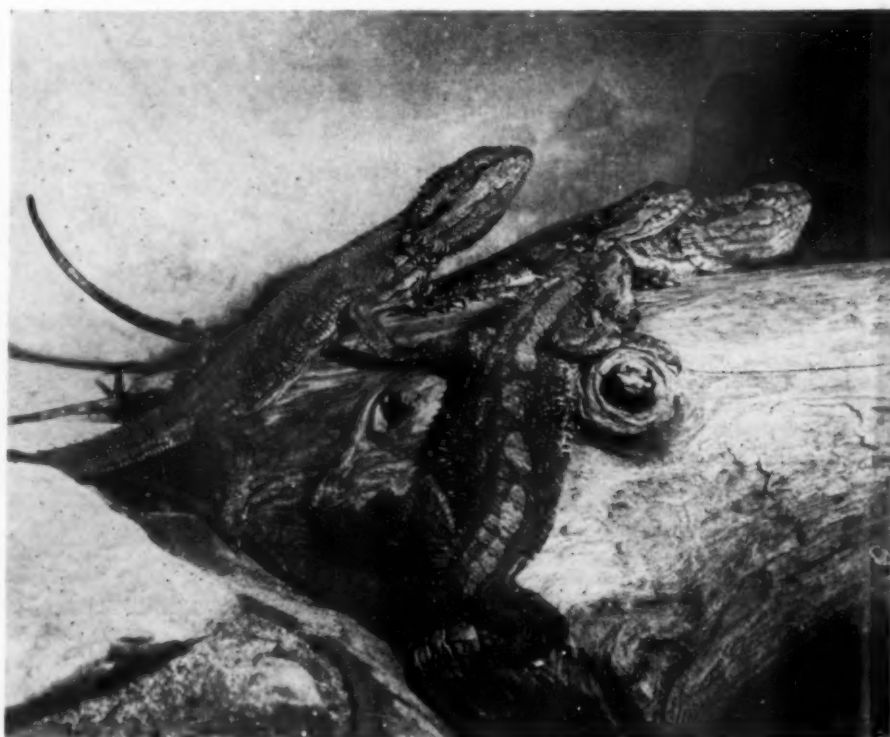
#### RADIO

## Extend Television Network From East to Mississippi

► TELEVISION receivers in the Great Lakes region and along the Mississippi river will be able to pick up by coaxial cable programs from the Atlantic coast by mid-January, the American Telephone and Telegraph Company revealed. A new coaxial cable installation between Philadelphia and Cleveland will be ready for use by Jan. 11, it states.

This means that television broadcasting in cities from Boston to Richmond will reach television stations in Milwaukee and St. Louis and cities between them and the East. It means that the majority of home television sets in the populous area from the east coast to the Mississippi will be able to get programs originating anywhere in the area.

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**BEARDED LIZARDS**—Part of the strange plane load of reptiles from Australia are these members of the lizard family.

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## ASTRONOMY

# Two Moon Eclipses in 1949

Orion, the warrior, and Sirius, brightest star seen in the evening skies, will be visible during January. Planet Saturn will appear in the evening.

By JAMES STOKLEY

► WITH the coming of January, we look ahead to the new year. While no one can predict human behavior during 1949, we can with great certainty tell of some of the things that will happen in the heavens before another new year is celebrated, and some interesting events are in store for us. There are, for example, two total eclipses of the moon, both of which will be seen from the United States, the first since Dec. 18, 1945. These will come on April 12 and October 6, and full details will be given in these articles as those months approach.

During January evenings, the skies present their typically mid-winter appearance, with Orion, the warrior, riding high in the south, as shown in the accompanying maps. These give the positions of the stars about 10:00 p.m. at the first of the month, and an hour earlier on the 15th. Below and left of Orion is brilliant Sirius, brightest star seen in the evening skies. This is the "dog star," which is part of Canis Major, the great dog. His smaller brother, Canis Minor, is a little higher and farther east, with another brilliant star, Procyon. Still higher, we come to Gemini, the twins, with Castor and Pollux, the latter the brighter.

## V-Shaped Group

Above and to the right of Orion is Taurus, the bull. A V-shaped group of stars, called the Hyades, marks the animal's face, and in left-hand arm of the V is the bright reddish star Aldebaran, one of his eyes.

In Orion itself there are two stars of the first magnitude. Betelgeuse is the upper, and Rigel the lower. Between them is the row of three fainter stars, named Alnilam, Alnitak and Mintaka, which form Orion's belt.

Looking toward other parts of the sky we find Deneb, in Cygnus, the swan. Though this is a first magnitude star, it is now so low in the sky that it looks much fainter. The same is true of Regulus, in Leo, the lion, which we see in the east. In this constellation, a little below Regulus, appears Saturn, the only planet now easily visible in the evening.

On Jan. 17 Mercury is farthest east of the sun, and remains in the sky briefly after the sun has set. However, it is then so low that it will be quite difficult to see. Venus, on the other hand, is low in the east just before sunrise, but is exceedingly bright, and not difficult to locate. Mars sets in the west soon after the sun, in the con-

stellation of Capricornus, the sea goat, but it is very faint, of the second magnitude, and not at all conspicuous. Jupiter is directly beyond the sun on Jan. 1, and all month will be so nearly in the same direction that it will not be visible.

As we look forward to the astronomical program which 1949 has in store for us we find four eclipses on the calendar. Two are of the sun, not visible in the United States or Canada. The other two, of the moon, are visible here. Both solar eclipses are partial, and of little scientific interest. The first, on April 28, will see a maximum of about 60 percent of the sun's diameter covered by the moon, the eclipse being visible in Europe, North Africa, Greenland and the North Polar regions.

The second solar eclipse comes on Oct. 21, with 96 percent of the sun's diameter obscured. This, however, is even more inaccessible, as it will be visible from the South Polar regions, the southern part of the Pacific Ocean, New Zealand and all of Australia except the western part.

The first of the total eclipses of the moon for the year comes on the evening of April 12, with the moon completely immersed in the earth's shadow from 10:28 to 11:54, E.S.T. Except for the fact that Alaska will not see the beginning, this will be visible throughout North and South America.

Lunar eclipse number two comes on the evening of Oct. 6, with the moon totally shaded by the earth between 9:30 and 10:33 p.m., E.S.T. This time the beginning will not be seen along the Pacific coast of North America, but otherwise it will be visible in both North and South America.

Not only can the moon eclipse the sun as it passes in front of it, it also can hide stars or planets along its path. Every night some stars are thus eclipsed, or "occulted," but it rarely happens with a planet or a really bright star. In 1949, however, this occurs several times.

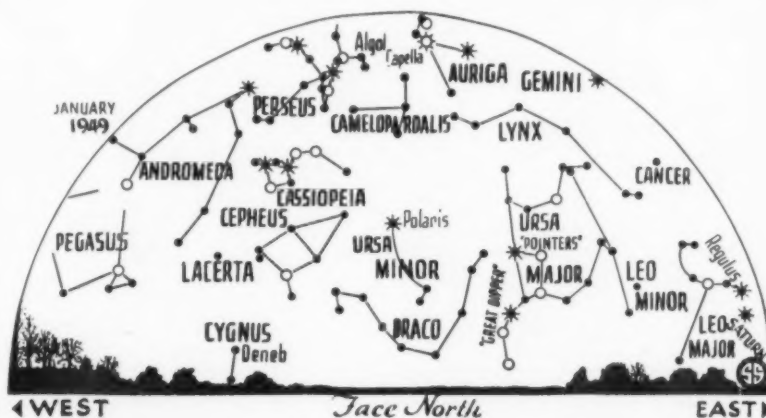
On three occasions there will be occultations of the red star Antares, in the constellation of Scorpius, the scorpion. This group shines brilliantly in the south in summer evenings. The first occultation of Antares is in the early morning hours of April 16, and here again the western part of the United States is deprived of a view. On June 10 Antares is so hidden again, this time late in the evening, but again the western states are left out. They score on Aug. 30, with the third, which is not seen at all in the east. Unfortunately, this happens in the afternoon hours, so it will only be visible with the aid of a telescope. Also, people in the western states will only see the star emerge from behind the moon, as the beginning of the occultation occurs below the horizon.

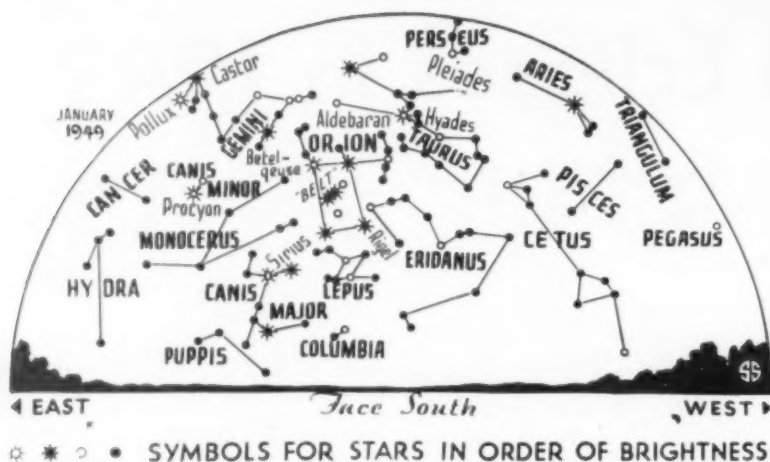
## Occultation of Venus

An occultation of the planet Venus is listed for Aug. 26. This will be visible only in the eastern part of the country, and again the beginning will be below the horizon. Venus is so bright, however, that the end should be seen easily with binoculars, and perhaps even with the unaided eye.

Tracing the course of the planets during 1949, we find that Mercury will be to the east of the sun, and potentially visible in the evening, on Jan. 17, May 10 and Sept. 7. It will appear in the morning sky before sunrise about Feb. 27, June 28 and Oct. 19.

At the start of the year, Venus is a morning star, shining in the east before sunrise, but on April 16 it will pass behind the sun and will be invisible for a month or so around this date. By early summer it will begin to be conspicuous in the





western evening sky. On Nov. 20 it will be farthest east of the sun, and will set about three hours after that body. On Dec. 26, 1949, when it will be in the constellation of Ophiuchus, it will be at its greatest brilliance, with magnitude of minus 4.4, which is about 15 times as bright as the star Sirius.

Mars, as for many months past, will be inconspicuous during the first part of 1949. On St. Patrick's day it will be on the far side of the sun, at a distance of 221,770,000 miles. Then it will swing to the western side of the sun, and will begin to be visible in the east in the early morning sky. Approaching nearer the earth, it will reach first magnitude by the end of October. On Dec. 19, 1949, it will be a quarter of the way around the sky to the west of the sun, when it will rise about midnight. At that time it will be only 124,790,000 miles away. (In March, 1950, it will be opposite the sun, rising at midnight, and 60,427,000 miles away, its closest approach on this trip.)

Jupiter, in the same direction as the sun Jan. 1, will be opposite that body on July 20, so it will be prominent in the summer evening skies. Saturn, now visible, will be opposite the sun Feb. 21, and will be conspicuous during the spring and early summer.

#### Time Table for January

Jan.	EST
3	9:00 a. m. Earth nearest sun, 91,469,000 miles
5	3:00 a. m. Moon farthest, 251,200 miles
7	6:51 a. m. Moon at first quarter
11	1:55 a. m. Algol (variable star in Perseus) at minimum
14	4:59 p. m. Full moon
	10:44 p. m. Algol at minimum
16	10:00 p. m. Moon nearest, 225,600 miles
17	9:54 a. m. Moon passes Saturn
	7:33 p. m. Algol at minimum
20	4:22 p. m. Algol at minimum
21	9:07 a. m. Moon in last quarter
24	3:00 a. m. Venus passes Jupiter
28	9:42 p. m. New moon

Subtract one hour for CT, two hours for MT, and three hours for PT.

Science News Letter, December 25, 1943

#### ERRATA, Vol. 54, Nos. 1-26, July-December, 1948

PAGE	TITLE BEGINS	CORRECTION
6	Poison Gas	Line 1, delete poisonous; line 10, well-known for poisonous.
13	Soap Operas	See Letters to Editor, p. 100
100	Boring into Wood	See Letters to Editor, p. 180
124	Puzzle Over Metasequoia	See Letters to Editor, p. 132
126	Virus Molecules	Line 17, one millionth for four ten-thousandths.
154	Guardian of Antiquity	Sub title: Fourteen for eight; Col. 1, par. 6, line 10, 14 for eight.
163	Seedless Watermelons	Col. 3, par. 7-8, sex cell for cell; 7 for two sets of; promotes for retards; number for sets; 14 for four sets of; doubled for nearly sexless four; melon whose sex cell is for three-chromosome melon.
224	Nature Ramblings	Col. 3, line 1, desiccation for dessication.
238	Germ-Carrying Mosquitoes	Line 2, read Wake and Guam islands; line 6, Wake for the; line 13, after found insert on Guam, that for the; line 19, On Guam for Along.
240	Nature Ramblings	Col. 3, line 12, latitude for longitude.
260	Sticky-Leaved Weed	Change Dr. to Mr.; lines 9-10, delete in the hills.
262	Meteor from Outer Space	Col. 3, line 1, kinetic energy for force.
295	Spectrographic Methods	Line 7, Optical Society of America for American Chemical Society.
326	New Camera May Help Save	Line 2, Cancer for ulcer.

#### ENGINEERING

### Titanium Metal May Replace Many Now in Use

► IT IS as strong as steel, as rust-proof as platinum, a little heavier than aluminum and resistant and strong at fiery temperatures. Pure titanium metal has all these features, and more besides, engineers from industrial and government laboratories were told at a Symposium on Titanium held by the Office of Naval Research in Washington.

Titanium metal has been called the "Cinderella of Metals," because after a long neglect it has recently been discovered to have a combination of the best features of aluminum alloys and stainless steels.

Its strength makes it suitable for guns, and its light weight would more easily allow an airborne army to fly to battle with complete arms and other metal equipment. Titanium is so completely resistant against salt water and salt air that it can be compared only with platinum in this respect.

Entire seaplanes might be built of the strong but light metal.

Titanium's corrosion resistance is maintained against the violent acids. Aqua regia, which dissolves gold, does not damage titanium, even when hot. Industrial chemical processes, plagued with corrosion, can use titanium for pipes, tanks and fittings.

The high melting temperature of the metal classes it with tungsten as a "refractory" metal. Titanium holds its strength at high temperatures, promising use in aircraft engines and jet turbines.

Ores of titanium are widely distributed, and it is the fourth most plentiful mineral on the earth. Yet the value of titanium has been little appreciated because of the difficulty in producing it in pure form. Cheap production of titanium is a major goal of present work described at the symposium.

The current price of \$5 per pound is not surprising in view of the present small-lot production of a few pounds at a time. The big difficulty is getting the metal pure enough. When titanium was first isolated in 1825 by Berzelius, small amounts of oxygen from the air made his sample brittle. Methods of excluding the air are now used, but there is still difficulty in finding a crucible in which to melt the metal, as most lining materials that have been tried were dissolved.

Titanium investigation is wide open for research and inventions, the symposium emphasized. Almost everything that is known about titanium looks good, and scientists promised the meeting that there are more exciting developments yet to come from this "rediscovered" metal.

Science News Letter, December 25, 1948

Plants vary widely in ability to sprout and to grow in salty soils.



## PSYCHIATRY

# Multiple Sclerosis Aid

► PSYCHIATRIC treatment can help multiple sclerosis patients in two ways, Dr. O. R. Langworthy of Baltimore told the Association for Research in Nervous and Mental Disease at its meeting in New York.

1. It can boost the patient's morale. This is important because multiple sclerosis is a progressive, crippling disease which strikes at an early age but allows its victims to live a long time.

2. More intensive psychiatric treatment might arrest the progress of the disease if, as Dr. Langworthy suspects, emotional turmoil operates on the blood vessels of the brain in such a way as to cause the organic nerve changes of multiple sclerosis. While this is only theory, Dr. Langworthy thinks intensive psychiatric treatment should be tried on an experimental basis.

Dr. Langworthy bases his theory on the fact that patients he has studied have had emotional difficulties of an hysterical type long before the organic symptoms of multiple sclerosis set in.

Multiple sclerosis is "in some sense an allergic disease," Dr. Tracy J. Putnam, of Beverly Hills, Calif., declared.

But attempts to change the patient's allergic tendencies with vaccines, histamine, benadryl, pyribenzamine and other anti-allergic drugs have been disappointing.

Dicoumarin, anti-clotting chemical, seems to reduce the tendency to acute relapses but has no effect on established symptoms.

A permanent change to a better climate, Dr. Putnam said, seems often to be effective in arresting the course of the disease. It is commoner and more severe, he pointed out, in cold wet climates than in warm dry ones.

"Startling" differences from the normal were revealed in personality tests of multiple sclerosis patients. These were reported by Dr. Molly R. Harrower of New York. She said the deviations are "so startling" as to "call for serious attention."

The startling differences showed up in their lack of answers reflecting anxiety and concern over bodily functions, their willingness to be dependent, their almost exaggerated submission and compliance, and their over-cordiality to other persons.

Science News Letter, December 25, 1948

## ASTRONOMY

# More Work on Giant Eye

► THE 200-inch mirror of the Hale telescope at Palomar Observatory, Calif., will probably have to be removed from the telescope and some of the glass polished away before this "gigantic eye" begins to probe the universe.

When final tests of the mirror were made in the optical shop at the California Institute of Technology over a year ago, the outer edge of the glass disk, almost 17 feet across, was found to be about 20 millionths of an inch too high. It was estimated, however, that when the mirror was placed in a horizontal position in the telescope, the edge would sag about this amount, explains Dr. Ira S. Bowen, Observatory director.

Under actual operating conditions, however, the mirror did not sag at the edge as much as expected. The edges still tended to "turn up" a bit. This was corrected to some extent by modifying the support system, but not enough.

It was also found that the mirror did not adjust uniformly to temperature changes. The edge was turned up by different amounts, depending upon the temperature to which the mirror had been exposed during the preceding 24 hours.

Several remedies will be tried to overcome these difficulties. A system of small fans will be installed inside the cell which holds the mirror. The outside edge will

be insulated, though previous attempts of this type with other telescope mirrors have not proved too satisfactory.

But if these changes, or a combination of them, do not enable the telescope to catch light that started on its way to the earth a billion years ago, some of the glass will have to be removed from the mirror's outer edge. This area, 18 inches wide, represents about 30% of the total mirror surface.

If such polishing is required, it will be done at the observatory. Actually not more than a few millionths of an inch must be ground away. But a minimum of six months would be required for the job, as the mirror must be tested in the telescope frequently to avoid any possibility of removing too much glass.

Science News Letter, December 25, 1948

## AERONAUTICS

# Aviation Trophy Honors Supersonic Achievement

► AVIATION'S highest honor, the Collier Trophy, was presented by President Truman to three men most responsible for the attainment, on Oct. 14, 1947, of human supersonic flight. The award was presented on the 45th anniversary of the day that the

Wright Brothers conquered the air.

The men to receive this high honor, of which the National Aeronautic Association is custodian, are John Stack, research scientist of the National Advisory Committee for Aeronautics; Lawrence D. Bell, president of the Buffalo company which bears his name and builder of the plane that beat the speed of sound; and Capt. Charles E. Yeager, U. S. Air Force, pilot of the plane in its first supersonic flight.

Presentation of the trophy, established 37 years ago by Robert J. Collier, the first editor of Collier's Weekly, for flight at supersonic speeds only 45 years after the first powered, man-carrying airplane flight in history, points emphatically to the nation's aeronautical progress. The first problem in this particular undertaking was to determine the physical laws which would affect supersonic flight. John Stack was a leader in the necessary studies. His work on the fundamental problem was made at NACA's Langley Field, Hampton, Va., with its wind tunnels and in its laboratories.

The airplane that traveled much faster than the 760 miles an hour, the speed of sound at sea level, is the U. S. Air Force XS-1, an experimental, rocket-powered, instrument-carrying, research plane built by the Bell Aircraft Corp., in the design of which NACA, Air Force and Bell engineers all played a part. Mr. Bell's personal contribution in the design was important because he has been building many types of experimental and other planes for over 35 years.

Before the plane was pushed to supersonic speed, it was tested at lower speeds over and over again by Capt. Yeager. First tests were as a glider. Later it traveled on its own power. In all flights, it was taken high into the atmosphere by an Air Force bomber and released when proper altitude was gained. These tests gave the pilot accumulated scientific knowledge of what was ahead in transonic and supersonic flights, and readied him for the flight that broke the sound barrier.

Science News Letter, December 25, 1948

# On This Week's Cover

This pine tree has been spared the lumberman's axe and stands in solitary beauty as a locomotive-powered, rotary snowplow on the right throws snow out in an arc silhouetting it in the foreground.

Science News Letter, December 25, 1948

A helping of *potato* has about as much iron as two slices of enriched bread or about as much as half an egg; one medium-sized boiled potato has as much vitamin C as a small glass of tomato juice.

*High fuel consumption* at low speeds is today one of the greatest barriers to the introduction of jet-propelled airliners on scheduled routes.

BOTANY

# NATURE RAMBLINGS

by Frank Thone



## Trees Bearing Gifts

► CHRISTMAS TREES bear strange, bright, sweet fruits, quite alien to their normal burden of dry, sober-hued cones. Children, accustomed to miracles, unquestioningly devour the brightness with wide eager eyes, the sweetness with omnivorous and bottomless stomachs. Only to grown-ups, who have already all but shut the gates of the Kingdom against themselves,

does there seem anything out of place about a conifer tree holding forth on its hundred green fingers gifts of gilded walnuts or ruby-hued lollipops.

Yet we may be on the threshold of even stranger wonders than these, through the workings of those modern magi, the chemists. Instead of offering a few goodies hung on their branches, small trees may be giving us the branches themselves in the guise of meat and milk and sugar for our meal—and even a synthetic liqueur to top it off withal.

It isn't a question of mere possibility any more. It has been known for a long time that wood can be changed into sugar by a quite simple treatment with dilute acid. There probably isn't a high-school chemistry student in the land who hasn't done it. Feeding the sugar to yeasts, along with a few necessary mineral salts, is equally simple; the process can be directed either to the production of alcohol or to the growth of great masses of yeast, as desired. The yeast in turn can be used for feeding livestock, to produce meat and

milk. It may soon be possible to process the yeast directly into a palatable high-protein human food.

All this has been accomplished already, not merely in laboratory test-tubes and flasks, but in fairly large-scale pilot-plant vats and stills. The chemistry problem has been successfully finished; remaining for consideration are questions of engineering and economics. If these can be solved with equal success, the coming generation may see, not single trees bearing gifts at Christmas, but whole hosts of them becoming gifts themselves every day in the year.

This does not need to mean a further devastation of our already sadly depleted forest lands. For this chemical-biological conversion of wood into food even poor and ill-favored trees, now despised and rejected, will serve perfectly well. Millions of acres of pine-barrens and scrub-oak wasteland, at present not rated as even low-grade pasture, may on some not too remote tomorrow be putting red steaks, white milk and golden butter into our Christmas kitchens.

Science News Letter, December 25, 1948

## FORESTRY

# Low-Grade Timber Uses

► TREES like aspen and beech, scornfully passed up as not worth cutting in the lush days of American lumbering, are now coming into their own, it was demonstrated at the meeting of the Society of American Foresters in Boston. Several speakers told how these Cinderella tree species are beginning to be better appreciated, now that wood and wood products are becoming scarcer and costlier.

In the region around the Great Lakes, two-fifths of the land under timber is now covered with aspen, stated Hereford Garland, of the Michigan College of Mining and Technology, and Z. A. Zasada of the Lakes States Forest Experiment Station. Hitherto it has been the policy simply to let aspen stands alone, for their water-conservation and other protective functions, but not to expect much of the species in the way of direct economic returns. However, with the growing wood hunger all over the country, a change of policy seems indicated.

A little of the timbers, about six percent, can be sawed into lumber, a survey showed; 18 percent is in the pole timber class; the rest is classified as seedlings and saplings of varying degrees of promise. A large use in paper-pulp is possible, especially if sizes considered unsuitable for high-grade pulp are permitted to be used in the production of building paper.

Beech is another species hitherto considered secondary that is now being looked at somewhat more favorably, reported David B. Cook of the New York State Conservation Department and Ivan H. Sims of

the Northeastern Forest Experiment Station. Flooring is its principal lumber use; other uses are mostly for pieces that can be handled in short lengths, because of beechwood's troublesome tendency to warp in seasoning. The two foresters expressed the belief, however, that research will develop more effective seasoning methods, which will improve the lumber to the point where old-time prejudices against it will be overcome.

Low-grade hardwoods in the South are also coming in for more consideration. Such trees as ash, hackberry, elm and the gums, ignored when Southern lumbermen were intent only on highgrade pine, are finding scores of uses, all the way from pulpwood to small lumber. These uses were reviewed before the meeting by Paul N. Garrison, chief forester of the Gaylord Container Corporation of Bogalusa, La.

Low-grade softwoods as well as the once-despised hardwoods have begun to demonstrate their possible value in the Pacific Northwest, stated George L. Drake of the Simpson Logging Company, Shelton, Wash. In addition, removal of bark from big logs before sawing leaves slab and trimmings, once merely tossed under the boiler, ready to be chipped into material for the pulpwood digester.

Science News Letter, December 25, 1948

An experimental type of *radio receiver*, known as a single-sideband receiver, uses an electronic principle which doubles the number of broadcasts usually accommodated by a given radio band.

## LINGUAPHONE



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# Books of the Week

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**ANNOTATED BIBLIOGRAPHY ON ATOMIC ENERGY:** 257 Selected References for Schools and Discussion Groups—Israel Light—*Teachers College*, 29 p., paper, 35 cents.

**BLOOD'S MAGIC FOR ALL**—Alton L. Blakeslee—*Public Affairs Committee*, 32 p., illus., paper, 20 cents. Giving a good idea what you are contributing to public health and safety when you give a pint of your blood to the National Blood Program of the Red Cross.

**CARNEGIE CORPORATION OF NEW YORK, REPORT OF THE PRESIDENT**—*Carnegie Corporation of New York*, 32 p., paper, free upon request direct to publisher, 522 Fifth Ave., New York 18.

**A CATALOGUE OF INSECTICIDES AND FUNGICIDES, VOLUME II: CHEMICAL FUNGICIDES AND PLANT INSECTICIDES**—Donald F. H. Frear—*Chronica Botanica*, 153 p., illus., \$5.50. Arranged according to a coding system.

**CHEMISTRY AND USES OF INSECTICIDES**—E. R. de Ong—*Reinhold*, 345 p., illus., \$6.00. A book of information for the general reader, a reference book for the professional worker and a text for the college student.

**CORNELL CONFERENCES ON THERAPY, VOLUME THREE**—Harry Gold and others, Eds.—*Macmillan*, 337 p., \$3.50. One of a series of volumes being issued annually to present the conferences held at Cornell University Medical College and the New York Hospital.

**CAUSES OF INDUSTRIAL PEACE UNDER COLLECTIVE BARGAINING, CASE STUDIES 3: THE DEWEY AND ALMY CHEMICAL COMPANY, THE INTERNATIONAL CHEMICAL WORKERS UNION**—Douglas McGregor and Joseph N. Scanlon—*National Planning Association*, 85 p., paper, \$1.00.

**CENTER FIRE METRIC PISTOL AND REVOLVER CARTRIDGES, VOLUME I of Cartridge Identification**—Henry P. White and Burton D. Munhall—*Infantry Journal*, 97 p., illus., \$7.50. Useful reference book for police officers and others concerned with ballistical data.

**CRUSADE IN EUROPE**—Dwight D. Eisenhower—*Doubleday*, 559 p., illus., \$5.00. This was a crusade for intellectual and scientific freedom as well as the more physical liberty to live and move about without the restraints of barbed wire and Gestapo. A gripping, personal account.

**INVESTIGATIONS OF HUMAN REQUIREMENTS FOR B-COMPLEX VITAMINS**—Max K. Horwitt, Erich Liebert, Oscar Kreisler and Phyllis Wittman—*National Research Council*, 106 p., paper., \$1.00.

**MICROWAVES AND RADAR ELECTRONICS**—Ernest C. Pollard and Julian M. Sturtevant—*Wiley* 426 p., illus., \$5.00. A text for advanced undergraduate or graduate courses in physics or engineering based on experience at the Radiation Laboratory of MIT.

**THE NATIONAL ACADEMY OF SCIENCES AND THE NATIONAL RESEARCH COUNCIL**—Raymund L. Zwemer—*National Research Council*, 5 p., illus., paper, free upon request direct to publisher. Historical and other information about these important scientific societies.

**PROPAGATION OF SOUND IN THE OCEAN**—J. Lamar Worzel and others—*Geological Society*

*of America*, 34 p., illus., \$2.75 Including "Explosion Sounds in Shallow Water," "Theory of Propagation of Explosive Sound in Shallow Water," and "Long-Range Sound Transmission."

**PHOTOGRAPHIC 1949: The Annual of America's Leading Photographers**—American Society of Magazine Photographers—*McGraw-Hill*, 210 p., illus., \$6.95. A lovely annual about half of the photographs in which were never published, some rejected, but the photographers themselves believe you'll like them. A book for amateurs and picture lovers as well as professionals.

**RECOMMENDED DIETARY ALLOWANCES**—Food and Nutrition Board—*National Research Council*, 31 p., paper, 25 cents.

**THE ROAD TO REASON**—Lecomte du Nouy and translated and edited by Mary Lecomte du Nouy—*Longmans*, 254 p., illus., \$3.50. A philosophical work.

**ROCKET DEVELOPMENT: Liquid-Fuel Rocket Research 1929-1941**—Robert H. Goddard, edited by Esther C. Goddard and G. Edward Pendray—*Prentice-Hall*, 291 p., illus., \$6.50. Here is the history of the pioneer work in this important field.

**SCIENCE OUTPOST: Papers of the Sino-British Science Co-Operation Office (British Council Scientific Office in China) 1942-1946**—Joseph Needham and Dorothy Needham Eds.—*Pilot Press*, 313 p., illus., \$4.25. Letters, journals and even poems are included in this account of British cooperation in Chinese scientific work under the most difficult conditions of Western China.

**YOUNG PEOPLE'S BOOK OF JET PROPULSION**—Frank Ross, Jr.—*McBride*, 128 p., illus., \$2.75. Numerous photographs add to the interest of this book for boys.

**YOUR BABY: The Complete Baby Book for Mothers and Fathers**—Gladys Denny Shultz and Lee Forrest Hill—*Doubleday*, 278 p., illus., \$3.50. Generously illustrated with excellent photographs showing Dad as well as Mother how to care for the baby and small child.

Science News Letter, December 25, 1948

## PUBLIC HEALTH

### Death Rate Jump Noted For 1947 in New Figures

► THE death rate for the nation increased last year (1947), latest figures from the U. S. National Office of Vital Statistics show.

The 1947 figure was 1007.8 deaths per 100,000 estimated total midyear population, excluding armed forces overseas. The 1946 rate was 997.6 per 100,000. Deaths among the armed forces overseas and stillbirths are not included in these rates.

Almost a third, 31.9%, of deaths throughout the nation were due to diseases of the heart, which is the leading cause of death. Heart disease deaths increased during the year (1947) by 31,350 over the number of

heart deaths the preceding year.

Deaths from cancer, apoplexy, and diabetes also increased.

Bright side of the picture is that there were fewer deaths from nephritis (kidney disease) and that the major infectious diseases set new record lows in deaths.

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## MEDICINE

### Miniature Attacks May Be Yardstick for Big Disease

► A LITTLE of a disease may help solve the problem of a big disease, multiple sclerosis. It would do this by serving as a yardstick to test new drugs. This suggestion was made by Dr. Richard M. Brickner of New York at the meeting of the Association for Research in Nervous and Mental Disease.

Multiple sclerosis is a progressive paralytic disease. It strikes without warning, usually between the ages of 20 and 40. No cause or effective treatment has yet been discovered.

The miniature attacks Dr. Brickner suggests using for yardsticks of drugs are often brought on by exposure to light or heat or by eating or smoking.

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### COUNTING MILLIVOLTS TO PROTECT PEOPLE

Set-up at Vernay Laboratories for testing thermostats which will be used to safeguard the comfort and safety of air travellers. Thermostat plunger when tested must develop correct pressure (shown by gauge) at predetermined temperature which is verified by thermocouple and Speedomax Recorder.

Further information on request.



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# • New Machines and Gadgets •

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 445. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

❁ **VACUUM CLEANER** picks up dirt through a hose and discharges it down the sink drain, eliminating the job of emptying a dust bag. It has two four-foot sections of special hose attached to the suction unit, each stretchable to 20 feet. One end of the hose is attached to a disposal unit placed over the drain pipe, the disposal unit being attached to a water faucet.

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❁ **SKATE SHARPENER**, for the amateur, is a plastic block that can be easily held in the hand with slots on opposite sides for two types of blades. These slots contain a high-grade sharpening agent which quickly does the job when the block is rubbed back and forth on the blade.

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❁ **AUTOMATIC NEEDLE** threader, included in the sewing kit shown in the picture, is simple to operate and threading is accomplished without eye strain. The thread from one of the spools in the decorative plastic case is slipped under clamps



on a tiny sliding shuttle; whizzing the needle back and forth threads it.

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❁ **INEXPENSIVE blackboard**, for school or home use, has a paper or cardboard backing colored black with ink or dye, and then given a plastic waterproof coating. This recently patented school essential has a roughened surface that takes chalk; it can be easily cleaned with eraser or damp rag.

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❁ **NURSING BOTTLE**, a collapsible, disposable type for one use only, eliminates the task of washing and sterilizing bottles. Made of a soft, pliable, strong plastic that collapses as the food is drawn out. It ends fighting back-pressure, collapsed nipples and air-swallowing.

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❁ **WOVEN PLASTIC-FIBER innersoles** for shoes are designed to provide ventilation for the feet. They are easily washed with soap and water, are non-absorbent and moisture-proof and, in addition, are durable and hold their shapes.

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## Do You Know?

Milling wastes in rice mills can be used to provide a high-grade salad or cooking oil, laboratory experiments show.

Underground electric cables with rubber insulation are often greatly damaged by bacteria in the soil; lead-covered cable is safe from this danger.

Coffee-producing countries are tropical or semi-tropical; coffee-drinking countries, with the highest per capita rate of consumption, occupy the rugged areas of the North Temperate zone.

Serviceability of wood in construction depends upon one or more strength properties; each species of wood may excel in some particular property and in particular uses, but not in all properties and uses.

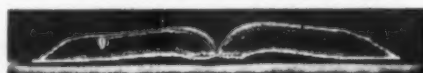
Cleveland, Ohio, long known as one of the top ports of the Great Lakes, had more than 60 foreign ships visit its harbor during the present year, in the seven to eight months that the harbor is not ice-locked.

The first steel-making blast furnace constructed in America was near the Jamestown colony in Virginia, blown-in in 1622; it never produced because its smoke-belching caused an Indian massacre.

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